



# User's Guide

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**FPDM1000 SERIES**  
**Positive Displacement**  
**Mechanical Flowmeters**



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It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, human applications.

**To the owner:**

Thank you for purchasing an OMEGA FPDM Series Flowmeter. Please take a few minutes to read through the manual before installing and operating your meter. If you have any problems with the meter, refer to the Maintenance and Troubleshooting sections of the manual.

This manual contains connection and operating instructions for the OMEGA FPDM Series meters with mechanical displays. This includes the following models:

FPDM1004	FPDM1006
FPDM1005	FPDM1007

The OMEGA FPDM Series Flowmeter has incorporated the oval rotor principal into its design. This has proven to be a reliable and highly accurate method of measuring flow. Exceptional repeatability and high accuracy over a wide range of fluid viscosities and flowrates are features of the OMEGA FPDM Series Flowmeter design. The low pressure drop and high pressure rating means the OMEGA FPDM Series Flowmeter is suitable for both gravity and pump (in-line) applications.

The OMEGA FPDM Series Flowmeters are available in either Aluminum or 316 Stainless Steel. Standard rotors are made from PPS.

The OMEGA FPDM Series mechanical displays have a resettable batch totalizer and non-resettable accumulative totalizer.

**IMPORTANT INFORMATION**



**Please read this information carefully before use!**

Before use, confirm the fluid to be used is compatible with the meter or consult with OMEGA for advice.

To prevent damage from dirt or foreign matter, OMEGA recommends a Y or basket type 60 mesh strainer be installed as close as possible to the inlet side of the meter. (If required, contact OMEGA for further information.)

NOTE: When a strainer is installed it should be regularly inspected and cleaned. Failure to keep the strainer clean will dramatically effect flowmeter performance.

To prevent damage to the meter, slowly fill the system with fluid. This will prevent damage caused by air purge.

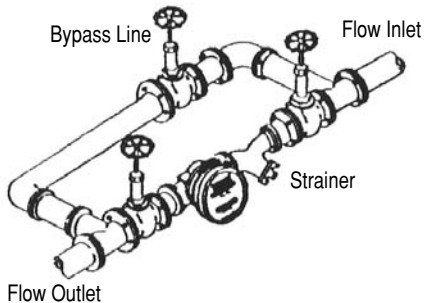
NOTE: Failure to do this could damage the meter.

For pump applications, turn off the pump at the end of each day.

## INSTALLATION

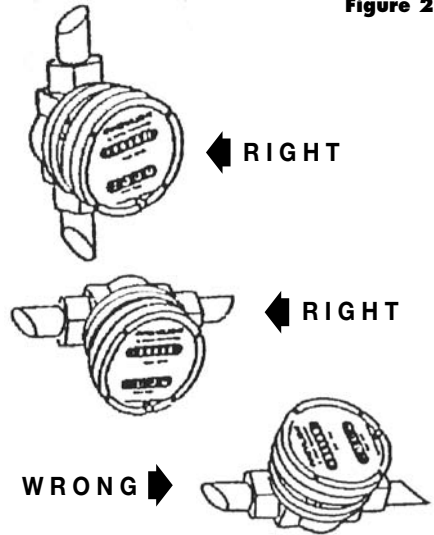
1. OMEGA recommends that when setting up pipework for meter installations, a bypass line be included in the design. This provides the facility for a meter to be removed for maintenance without interrupting production. (See Figure 1)

**Figure 1**



2. Use thread sealant on all pipe threads.
3. For pump applications, ensure pipe work has the appropriate working pressure rating to match the pressure output of the pump.
4. Install a wire mesh strainer (Y or basket type 60 mesh) as close as possible to the inlet side of the meter.
5. Ensure that the meter is installed so that the flow of the liquid is in the direction of the arrows embossed on the meter body.
6. The meter can be installed in any orientation as long as the meter shafts are in a horizontal plane. (See Figure 2) The register assembly may be oriented to suit the individual installation.

**Figure 2**



NOTE: Incorrect installation can cause premature wear of meter components

7. Do not overtighten meter connections.
8. It is important that after initial installation you fill the line slowly, high speed air purge could cause damage to the rotors.
9. Test the system for leaks.
10. Check the strainer for swarf or foreign material. After the first 200 litres, check periodically – particularly if the flowrate decreases.

## OPERATION

When fluid passes through the meter, the rotors turn. The gear located on top of one of the rotors drives the mechanical registers gear train which provides an accurate readout.



## SERVICE INSTRUCTIONS

### Disassembly:

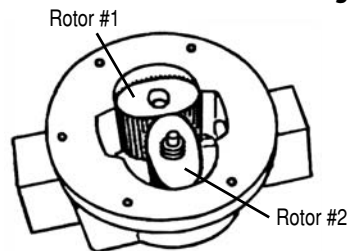
Ensure that the fluid supply to the meter is disconnected, and the line pressure is released before disassembly. Refer to the exploded parts diagram on page 6.

1. Remove the four screws located on the face of the register. Then remove the faceplate cover including register assembly.
2. Remove the four register mounting screws. Then remove the lower half of the register housing.
3. Remove the six coverplate screws and remove the coverplate.
4. Remove the four meter cap screws and remove the meter cap.
5. Remove rotors.

### Reassembly:

1. Clean all components before reassembly.
2. Before reassembly, check the condition of the rotors. Replace if necessary.
3. Replace the rotor (with the gear) on the short shaft in the housing. Then place the second rotor onto the shaft so as the rotors are at 90 degrees to each other. (See Figure 3)

**Figure 3**



*Rotors must be at 90° to each other*

Check rotor operation by turning either of the rotors. If the rotors are not in mesh correctly or do not move freely, remove one of the rotors and replace it correctly at 90 degrees to the other rotor. Recheck the operation of the rotors.

4. Inspect the gears in the meter cap for wear. Replace if required - refer to spare parts on page 6.
5. Replace the O-ring into the groove in the meter cap. If the O-ring has been distorted or is damaged in any way, replace it with a new part.
6. Replace the meter cap. Make sure the meter cap and the gear on the rotor meshes correctly with the gear in the meter cap. Insert the allen screws and tighten in the sequence 1, 4, 2 and 3.
7. Inspect the bevel gear, O-ring and output gear for wear or damage. Replace faulty components if necessary.
8. Replace the output shaft, bush and seal.

Disassembly of output shaft:

- a. Remove the bevel gear.
- b. Remove the circlip and push out the output shaft assembly, including the washer.
- c. Remove the seal.
- d. Carefully press out the output shaft bush (if required).

Assembly of output shaft:

- a. Carefully press the new output shaft bush into place. (Use Loctite Primer 7471, as per instructions, followed by sealant Loctite 262.)
  - b. Insert a new seal into the groove of the output shaft bush.
  - c. Replace the output gear and washer and replace the circlip to lock the output gear shaft into place.
  - d. Replace the bevel gear and tighten the grub screw onto the flat face of the shaft.
9. Place the O-ring into the groove in the meter cap. Replace the O-ring seal if required.

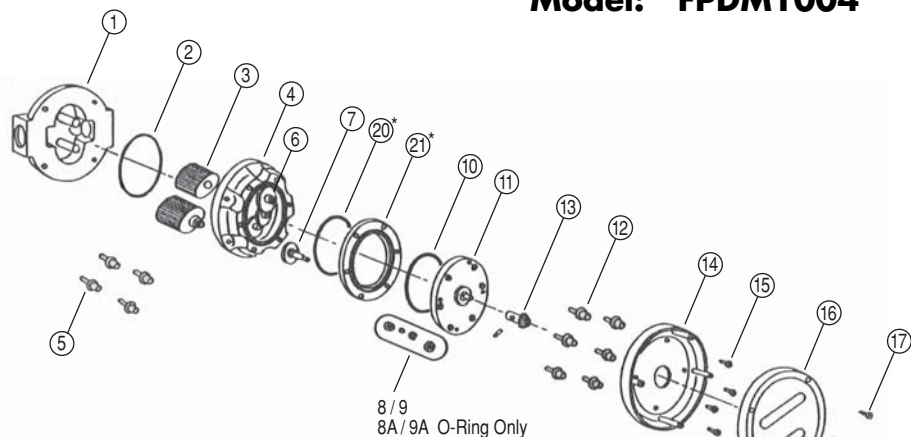
10. Place the coverplate onto the meter. Replace the coverplate screws and tighten the six cap head screws firmly.
11. Place the lower coverplate of the register into position. Replace the four screws and tighten.
12. Position the register correctly on top of the lower register cover. Replace the four screws and tighten.
13. Test the meter by turning the rotors with a finger or by applying low air pressure (no more than a good breath) to one end of the meter, before returning meter to the line.

## TROUBLESHOOTING

Symptom	Probable Cause	Corrective Action
FLUID WILL NOT FLOW THROUGH THE METER	<ol style="list-style-type: none"> <li>1. Foreign matter blocking rotors</li> <li>2. Line strainer blocked</li> <li>3. Damaged rotors</li> <li>4. Meter connections over-tightened</li> <li>5. Fluid is too viscous</li> </ol>	<p>Dismantle meter, clean rotors. Strainer must be fitted in-line.</p> <p>Clean strainer.</p> <p>Replace rotors. Strainer must be fitted in-line.</p> <p>Re-adjust connections.</p> <p>See specifications for maximum viscosity.</p>
REDUCED FLOW THROUGH THE METER	<ol style="list-style-type: none"> <li>1. Strainer is partially blocked</li> <li>2. Fluid is too viscous</li> </ol>	<p>Clean strainer.</p> <p>See specifications for maximum viscosity.</p>
METER READING INACCURATE	<ol style="list-style-type: none"> <li>1. Fluid flowrate is too high or too low</li> <li>2. Fluid is too viscous</li> <li>3. Excess wear caused by incorrect installation</li> </ol>	<p>See specifications for minimum and maximum flowrates.</p> <p>Bleed air from system.</p> <p>Check meter body and rotors. Replace as required. Refer to installation instructions.</p>
FLUID FLOWS BUT NO READING ON METER	<ol style="list-style-type: none"> <li>1. Bevel gear is loose on on shaft</li> <li>2. Rotor drive gear is damaged</li> <li>3. Transmission gears damaged</li> <li>4. Register gears damaged</li> </ol>	<p>Tighten grub screws.</p> <p>Replace rotor.</p> <p>Replace gears.</p> <p>Replace register assembly.</p>
FLUID LEAKS INTO REGISTER	<ol style="list-style-type: none"> <li>1. Seal worn or damaged on the coverplate</li> </ol>	<p>Replace seal. Check seal compatibility with fluid.</p>

# METER PARTS LISTING

**Model: FPDM1004**



\* = Parts for US Gallon models only.

u = Recommended Spare Parts to stock.

**Bold Text = Indicates Stainless Steel model parts.**

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
1	1		MS298N	Meter Body 1/2 in. NPT (Aluminum)
<b>1</b>	<b>1</b>		<b>MS337N</b>	<b>Meter Body 1/2 in. NPT (Stainless Steel)</b>
2	1	u	BS145TES	O-Ring (Teflon®)
2	1	u	BS145VS	O-Ring (Viton)
3	2	u	MS342MS	Rotors PPS (Polyphenylene Sulfide Resins)
3	2	u	MS342MHS	High Viscosity Rotors (PPS)
4	1		MS554S	Meter Cap Litres (Aluminum)
4	1		MS547S	Meter Cap US Gallons (Aluminum)
<b>4</b>	<b>1</b>		<b>MS545S</b>	<b>Meter Cap Litres (Stainless Steel)</b>
<b>4</b>	<b>1</b>		<b>MS546S</b>	<b>Meter Cap US Gallons (Stainless Steel)</b>
5	4	u	MS346S	Meter Cap Screws (Standard)
<b>5</b>	<b>4</b>	<b>u</b>	<b>MS350S</b>	<b>Meter Cap Screws (Stainless Steel)</b>
6	1	u	MS539S	Complete Gear Set - Litres
6	1	u	MS541S	Complete Gear Set - US Gallons
7	1	u	MS77S	Output Gear & Shaft Assembly
8	1	u	MS78S	Coverplate Seal / Bush Set Standard
8A	1	u	OR42CS	Solvent O-Ring (Kalrez)
9	1	u	MS78C	Coverplate Seal / Bush Set Solvent
9A	1	u	V7-007S	O-Ring (Viton)
10	1	u	BS145TES	O-Ring (Teflon®)
10	1	u	BS145VS	O-Ring (Viton)
11	1		MS99S	Coverplate (Aluminum) includes Bush
<b>11</b>	<b>1</b>		<b>MS99-1S</b>	<b>Coverplate (Stainless Steel) includes Bush</b>
12	6	u	MS312S	Coverplate Screws - Litre Model
<b>12</b>	<b>6</b>	<b>u</b>	<b>MS313S</b>	<b>Coverplate Screws (S/Steel) - Litre Model</b>
12	6	u	MS419S	Coverplate Screws - US Gallon Model
<b>12</b>	<b>6</b>	<b>u</b>	<b>MS420S</b>	<b>Coverplate Screws (S/Steel) - US Gallon Model</b>



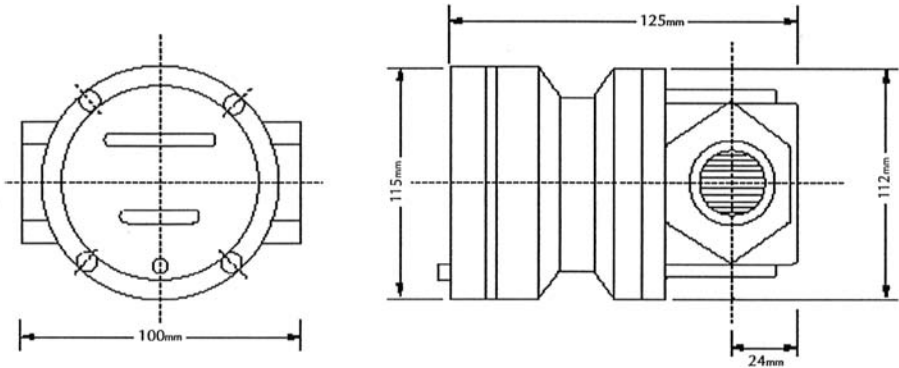
Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
13	1	u	MS83S	Bevel Gear Set
14	1		MS140S	Bottom Register Coverplate
15	4	u	MS111S	Mounting Screws
16	1	u	MS141M4GS	Register Assembly w/Coverplate - Litres
16	1	u	MS141UGS	Register Assembly w/Coverplate - US Gallons
17	4	u	MS129S	Register Body Screws
20	1	u	BS145TES	O-Ring (Teflon®)
20	1	u	BS145VS	O-Ring (Viton)
21	1	u	MS423S	Spacer Ring (Aluminum) US Gallon Model Only
21	1	u	MS423-1S	<b>Spacer Ring (S/Steel) US Gallon Model Only</b>

## SPECIFICATIONS

	Mechanical Meter Models
<b>Flow Ranges (LPM or GPM)</b>	1 to 30 / 0.26 to 8
Above 5 centipoise	3 to 25 / 0.8 to 6.6
Below 5 centipoise	± 1%
<b>Accuracy of Reading</b>	1000 Centipoise
<b>Maximum Viscosity*</b>	3450 kPa / 500 PSI / 34.5 Bar
<b>Maximum Operating Pressure</b>	-10°C to 80°C (+14°F to +176°F)
<b>Operating Temperature Range</b>	

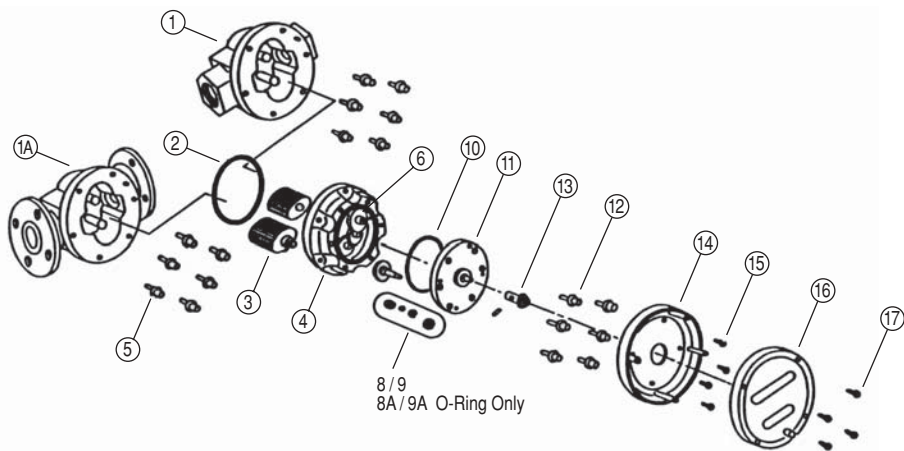
\* Unless high viscosity rotors are fitted.

## DIMENSIONS



# METER PARTS LISTING

**Model: FPDM1005**



u = Recommended Spare Parts to stock.

**Bold Text** = Indicates Stainless Steel model parts.

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
1	1		MS188N	Meter Body 1 in. NPT (Aluminum)
<b>1</b>	<b>1</b>		<b>MS186N</b>	<b>Meter Body 1 in. NPT (Stainless Steel)</b>
1	1		MS188F	Meter Body 1 in. ANSI 150 lb. Flange (Aluminum)
<b>1</b>	<b>1</b>		<b>MS186F</b>	<b>Meter Body 1 in. ANSI 150 lb. Flange (S/Steel)</b>
2	1	u	BS235TES	O-Ring (Teflon®)
2	1	u	BS235VS	O-Ring (Viton)
3	2	u	MS72S	Rotors (PPS) with Brass Hub
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS72-1HS</b>	<b>High Viscosity Rotors (SS) with S/Steel Hub</b>
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS72-1S</b>	<b>Rotors (SS) with S/Steel Hub</b>
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS72-2S</b>	<b>Rotors (PPS) with S/Steel Hub</b>
3	2	u	MS72HS	High Viscosity Rotors (PPS)
3	2	u	MS72HG-2S	High Viscosity Rotors (PPS) with S/Steel Hub
4	1		MS75S	Meter Cap Litres (Aluminum)
4	1		MS75US	Meter Cap Gallons (Aluminum)
<b>4</b>	<b>1</b>		<b>MS251S</b>	<b>Meter Cap Litres (Stainless Steel)</b>
<b>4</b>	<b>1</b>		<b>MS251US</b>	<b>Meter Cap US Gallons (Stainless Steel)</b>
5	6	u	MS114S	Meter Cap Screws (Standard)
<b>5</b>	<b>6</b>	<b>u</b>	<b>MS200S</b>	<b>Meter Cap Screws (Stainless Steel)</b>
6	1	u	MS294S	Complete Gear Set - Litres
6	1	u	MS316S	Complete Gear Set - US Gallons
7	1	u	MS77S	Output Gear & Shaft Assembly
8	1	u	MS78VS	Coverplate Seal / Brush Set (Viton)
8A	1	u	OR42C	Solvent O-Ring (Kalrez)
9	1	u	MS78C	Coverplate Seal / Brush Set Solvent
9A	1	u	V7-007S	O-Ring (Viton)
10	1	u	BS145TES	O-Ring (Teflon®)
10	1	u	BS145VS	O-Ring (Viton)

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
11	1		MS99S	Coverplate (Aluminum) includes Bush
11	1		<b>MS99-1S</b>	<b>Coverplate (Stainless Steel) includes Bush</b>
12	6	u	MS312S	Coverplate Screws
12	6	u	<b>MS313S</b>	<b>Coverplate Screws (Stainless Steel)</b>
13	1	u	MS83S	Bevel Gear Set
14	1		MS140	Bottom Register Coverplate
15	4	u	MS111S	Mounting Screws
16	1	u	MS141S	Register Assembly with Coverplate - Litres
16	1	u	MS141US	Register Assembly with Coverplate - US Gallons
17	4	u	MS129S	Register Body Screws
18	1		Customer to specify model	Legend Plate (not shown) includes Hammer Screws
19	1		MS37	Warning Label (not shown)

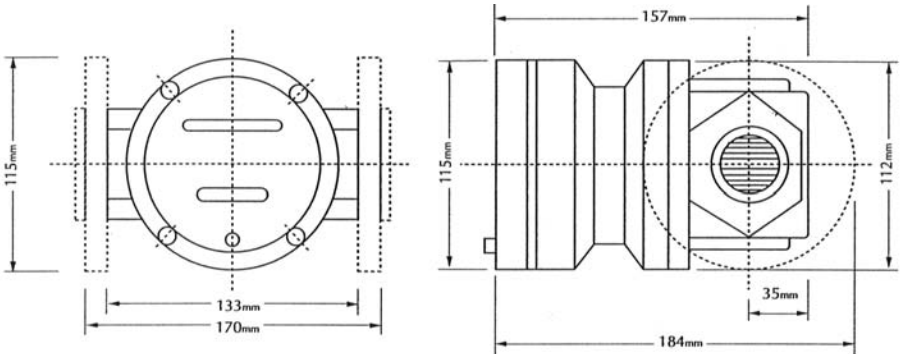
Note: Complete Register Assembly Part Numbers; "Litre" Register - MS84, "US Gallons" Register - MS84U.

## SPECIFICATIONS

	Mechanical Meter Models
<b>Flow Ranges (LPM or GPM)</b>	
Above 5 centipoise	6 to 120 / 1.6 to 32
Below 5 centipoise	10 to 100 / 2.6 to 26
<b>Accuracy of Reading</b>	± 1%
<b>Maximum Viscosity*</b>	1000 Centipoise
<b>Maximum Operating Pressure</b>	3450 kPa / 500 PSI / 34.5 Bar or Flange Rule
<b>Maximum Operating Temperature</b>	80°C / 176°F (Stainless Steel Models 120°C / 248°F)

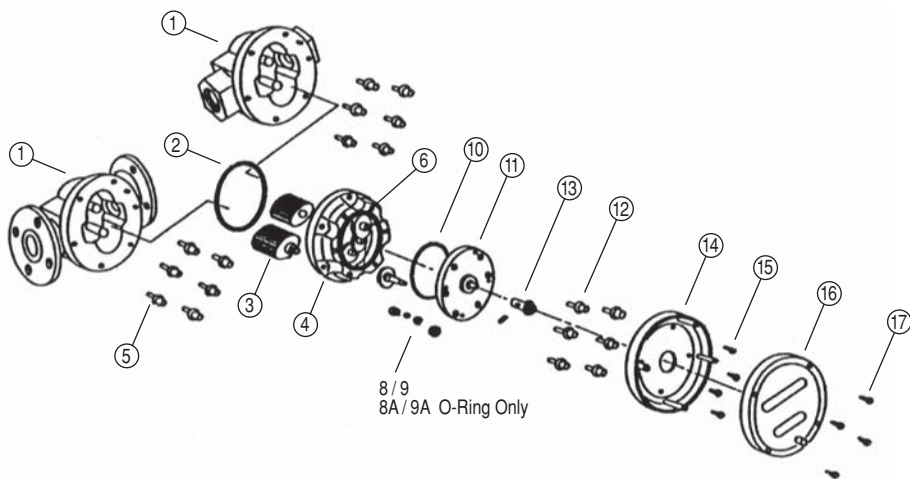
\* Unless High Viscosity Rotors are fitted.

## DIMENSIONS



# METER PARTS LISTING

**Model: FPDM1006**



u = Recommended Spare Parts to stock.

**Bold Text** = Indicates Stainless Steel model parts.

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
1	1		MS192N	Meter Body 1 1/2 in. NPT (Aluminum)
<b>1</b>	<b>1</b>		<b>MS190N</b>	<b>Meter Body 1 1/2 in. NPT (Stainless Steel)</b>
1	1		MS192F	Meter Body 1 1/2 in. ANSI 150 lb. Flange (Aluminum)
<b>1</b>	<b>1</b>		<b>MS190F</b>	<b>Meter Body 1 1/2 in. ANSI 150 lb. Flange (S/Steel)</b>
2	1	u	BS243TES	O-Ring (Teflon®)
2	1	u	BS243VS	O-Ring (Viton)
3	2	u	MS92S	Rotors (PPS) with Brass Hub
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS92-1S</b>	<b>Rotors (316 Stainless Steel)</b>
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS92-2S</b>	<b>Rotors (PPS) with S/Steel Hub</b>
3	2	u	MS92HS	High Viscosity Rotors (PPS)
3	2	u	MS92HS-2S	High Viscosity Rotors (PPS) with S/Steel Hub
4	1		MS222S	Meter Cap Litres (Aluminum)
4	1		MS222US	Meter Cap Gallons (Aluminum)
<b>4</b>	<b>1</b>		<b>MS223S</b>	<b>Meter Cap Litres (Stainless Steel)</b>
<b>4</b>	<b>1</b>		<b>MS223US</b>	<b>Meter Cap US Gallons (Stainless Steel)</b>
5	6	u	MS116S	Meter Cap Screws (Standard)
<b>5</b>	<b>6</b>	<b>u</b>	<b>MS180S</b>	<b>Meter Cap Screws (Stainless Steel)</b>
6	1	u	MS295S	Complete Gear Set - Litres
6	1	u	MS317S	Complete Gear Set - US Gallons
7	1	u	MS77S	Output Gear & Shaft Assembly
8	1	u	MS78VS	Coverplate Seal / Brush Set (Viton)
8A	1	u	OR42CS	Solvent O-Ring (Kalrez)
9	1	u	MS78C	Coverplate Seal / Brush Set Solvent
9A	1	u	V7-007S	O-Ring (Viton)
10	2	u	BS145TES	O-Ring (Teflon®)
10	2	u	BS145VS	O-Ring (Viton)

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
11	1		MS99S	Coverplate (Aluminum) includes Bush
11	1		<b>MS99-1S</b>	<b>Coverplate (Stainless Steel) includes Bush</b>
12	6	u	MS312S	Coverplate Screws - Litre Model
12	6	u	<b>MS313S</b>	<b>Coverplate Screws (S/Steel) - Litre Model</b>
13	1	u	MS83S	Bevel Gear Set
14	1		MS140RS	Bottom Register Coverplate
15	4	u	MS111S	Mounting Screws
16	1	u	MS141RS incl 15 & 17	Register Assembly Complete - Litres
16	1	u	MS141RUS incl 15 & 17	Register Assembly Complete - US Gallons
17	4	u	MS129S	Register Body Screws

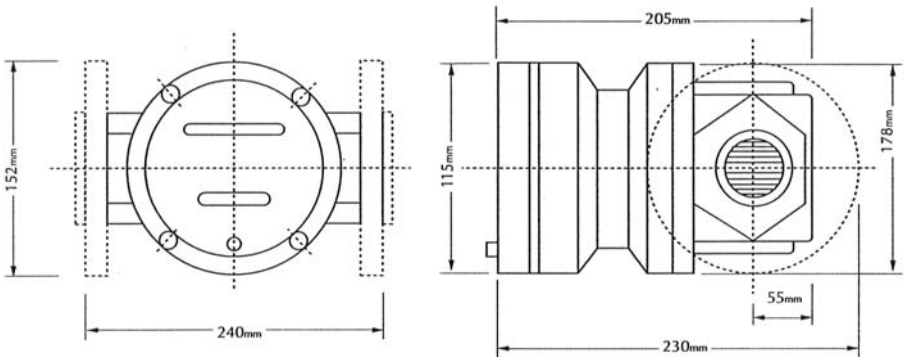
## SPECIFICATIONS

	Mechanical Meter Models
<b>Flow Ranges (LPM or GPM)</b>	
Above 5 centipoise	10 to 250 / 2.6 to 66
Below 5 centipoise	15 to 235 / 4 to 62
<b>Accuracy of Reading</b>	± 1%
<b>Maximum Viscosity*</b>	1000 Centipoise
<b>Maximum Operating Pressure**</b>	1800 kPa / 260 PSI / 18 Bar or Flange Rule
<b>Maximum Operating Temperature</b>	-10°C to +80°C (+14°F to +176°F) - Aluminum -10°C to +120°C (+14°F to +248°F) - Stainless Steel

\* Unless High Viscosity Rotors are fitted.

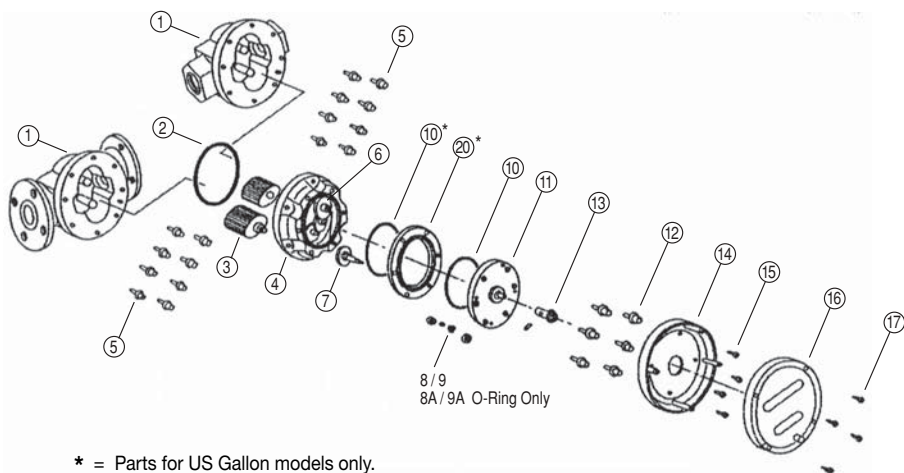
\*\* Meter conforms to PED 97/23/EC CAT 1.

## DIMENSIONS



# METER PARTS LISTING

**Model: FPD1007**



\* = Parts for US Gallon models only.

u = Recommended Spare Parts to stock.

**Bold Text** = Indicates Stainless Steel model parts.

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
1	1		MS520N	Meter Body 2 in. NPT (Aluminum)
<b>1</b>	<b>1</b>		<b>MS520-1N</b>	<b>Meter Body 2 in. NPT (Stainless Steel)</b>
1	1		MS483F	Meter Body 2 in. ANSI 150 lb. Flange (Aluminum)
<b>1</b>	<b>1</b>		<b>MS481F</b>	<b>Meter Body 2 in. ANSI 150 lb. Flange (S/Steel)</b>
2	1	u	BS252TES	O-Ring (Teflon®)
2	1	u	BS252VS	O-Ring (Viton)
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS105-1S</b>	<b>Rotors (316 S/Steel) with S/Steel Pinion</b>
<b>3</b>	<b>2</b>	<b>u</b>	<b>MS105-2S</b>	<b>Rotors (PPS) with S/Steel Pinion</b>
3	2	u	MS105HS-2S	High Viscosity Rotors (PPS) with S/Steel Pinion
<b>3</b>	<b>1</b>	<b>u</b>	<b>MS105-1HS</b>	<b>High Viscosity Rotors (S/Steel) S/Steel Pinion</b>
4	1		MS232S	Meter Cap Litres (Aluminum)
4	1		MS335US	Meter Cap US Gallons (Aluminum)
<b>4</b>	<b>1</b>		<b>MS233S</b>	<b>Meter Cap Litres (Stainless Steel)</b>
<b>4</b>	<b>1</b>		<b>MS425US</b>	<b>Meter Cap US Gallons (Stainless Steel)</b>
5	6	u	MS243S	Meter Cap Screws (Standard)
<b>5</b>	<b>6</b>	<b>u</b>	<b>MS282S</b>	<b>Meter Cap Screws (Stainless Steel)</b>
6	1	u	MS363S	Complete Gear Set - Litres
6	1	u	MS470S	Complete Gear Set - US Gallons
7	1	u	MS77S	Output Gear & Shaft Assembly
8	1		MS78VS	Coverplate Seal / Brush Set (Viton)
8A	1	u	OR42CS	Solvent O-Ring (Kalrez)
9	1	u	MS78C	Coverplate Seal / Brush Set Solvent
9A	1	u	V7-007S	O-Ring (Viton)
10	2	u	BS145TES	O-Ring (Teflon®)
10	2	u	BS145VS	O-Ring (Viton)
11	1		MS99S	Coverplate (Aluminum) includes Bush
<b>11</b>	<b>1</b>		<b>MS99-1S</b>	<b>Coverplate (Stainless Steel) includes Bush</b>

Item No.	Qty.	Rec. Parts	Part or Set (Order from this column only)	Part Description
12	6	u	MS312S	Coverplate Screws - Litre Model
<b>12</b>	<b>6</b>	<b>u</b>	<b>MS313S</b>	<b>Coverplate Screws (S/Steel) - Litre Model</b>
12	6	u	MS419S	Coverplate Screws - US Gallon Model
<b>12</b>	<b>6</b>	<b>u</b>	<b>MS420S</b>	<b>Coverplate Screws (S/Steel) - US Gallon Model</b>
13	1	u	MS83S	Bevel Gear Set
14	1		MS140	Bottom Register Coverplate
15	4	u	MS111S	Mounting Screws
16	1	u	MS141S	Register Assembly with Coverplate - Litres
16	1	u	MS141US	Register Assembly with Coverplate - US Gallons
17	4	u	MS129S	Register Body Screws
20	1	u	MS423S	Spacer Ring (Aluminum) - US Gallons Model Only
<b>20</b>	<b>1</b>	<b>u</b>	<b>MS423-1S</b>	<b>Spacer Ring (S/Steel) - US Gallon Model Only</b>

Note: Complete Register Assembly Part Numbers; "Litre" Register - MS84, "US Gallons" Register - MS84U.

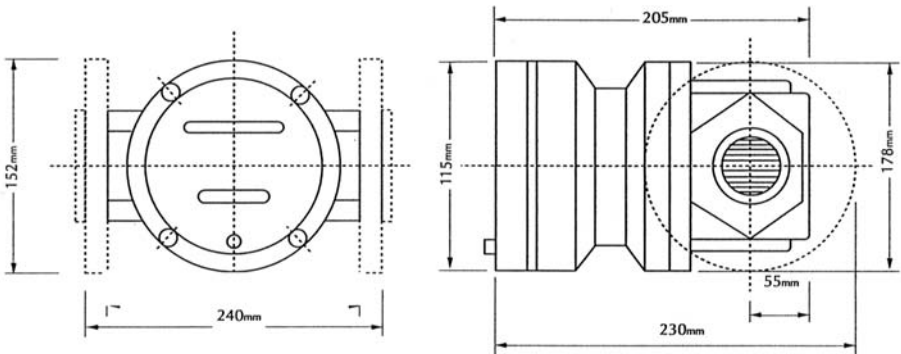
## SPECIFICATIONS

	Mechanical Meter Models
<b>Flow Ranges (LPM or GPM)</b>	
Above 5 centipoise	15 to 350 / 3.96 to 92.46
Below 5 centipoise	30 to 300 / 7.93 to 79.25
<b>Accuracy of Reading</b>	± 1%
<b>Maximum Viscosity*</b>	1000 Centipoise
<b>Maximum Operating Pressure**</b>	1800 kPa / 260 PSI / 18 Bar
<b>Operating Temperature Range</b>	-10°C to +80°C (+14°F to +176°F) - Aluminum -10°C to +120°C (+14°F to +248°F) - Stainless Steel

\* Unless High Viscosity Rotors are fitted.

\*\* Meter conforms to PED 97/23/EC CAT 1.

## DIMENSIONS











## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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